

Short Communication

First records of three snake species from Cambodia

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Cambodia harbours a high diversity of aquatic, fossorial, terrestrial and arboreal snakes with about 96 species recorded so far (e.g., Saint Girons, 1972; Stuart & Emmett, 2006; Stuart *et al.*, 2006, 2010; Grismer *et al.*, 2008; Brooks *et al.*, 2009; and references therein). Most snake species with wide distributions in Thailand, Laos and Vietnam are also usually found in Cambodia. Recent field work has revealed new snake species for the country, such as *Oligodon annamensis*, *Dendrelaphis ngansonensis*, and *Gongylosoma cryptum* (Neang & Hun, 2013; Neang *et al.*, 2015). However, due to large gaps in survey coverage, many species in Cambodia are known only from a single or very few records, and some widely distributed species that likely also occur in Cambodia have yet to be documented (see below). Understanding which snake species occur where in Cambodia is imperative for their conservation, as many taxa are persecuted out of fear or heavily harvested for food, skins or medicinal purposes (Stuart *et al.*, 2000; Brooks *et al.*, 2009). In addition, some species of

snakes are dangerously venomous to humans and therefore have medical significance.

This paper reports first records of three snake species in Cambodia, all verified with specimen vouchers and photographs in life. These include *Boiga guangxiensis* Wen, 1998, which was documented during fieldwork conducted on 22–28 September 2016 in Keo Seima Wildlife Sanctuary in Mondulkiri Province, and *Sinomicrurus maccllellandi* (Reinhardt, 1844) and *Indotyphlops albiceps* (Boulenger, 1898), which were recorded during fieldwork on 13–16 February 2016 and 26 September–7 October 2017 in Bokor National Park in Kampot Province (Fig. 1). These new discoveries indicate that the knowledge on the herpetofauna of Cambodia remains incomplete and that additional field research is warranted.

Field surveys were carried out during the day and at night by searching for snakes on the ground, on vegetation, and under surface cover such as logs, leaf litter and

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rocks. Specimens were photographed in life, humanely euthanized using cardiac injections of MS-222, fixed in 10% formalin, and later transferred to 70% ethanol. Specimens were deposited in the zoological collection of the Centre for Biodiversity Conservation (CBC) at the Royal University of Phnom Penh, Cambodia.

Boiga guangxiensis Wen, 1998

Material examined: CBC 02791 (Fig. 2), O’Raing District, Mondulhiri Province, Keo Seima Wildlife Sanctuary, 12°19’13.5”N, 107°04’01.9”E, 490 m above sea level (asl), collected on 25 September 2016 by Neang Thy.

Remarks: A single female with a long, slender, compressed body, snout to vent length (SVL) 1159.8 mm; tail length (TaL) 368.9 mm, rather short, one third of SVL, ration of TaL/SVL 0.32 or SVL/TaL 3.1; head distinct from neck; eight supralabials, 3rd–5th touching orbit; 13 (left)/12 (right) infralabials; one loreal; one preocular; two postoculars; 4/3 anterior temporals; 4/5 posterior temporals; dorsal scale row formula (scales at neck, midbody and anterior to vent) 21–21–15; vertebral scales enlarged; 272 ventral scales; anal plate entire; 149 paired subcaudal scales. In life, our specimen has olive brown and dark brown transverse bars, with light brown blotches anteriorly, only becoming olive brown posteriorly. These conform to the diagnostic characters of *B. guangxiensis* given by Wen (1998), Ryabov & Orlov (2010), Ziegler *et al.*, (2010) & Nguyen *et al.*, (2011). Wen’s (1998) statement that the supraocular does not touch the frontal may be in error. Our specimen has minor differences to specimens from China and Vietnam in having a higher number of ventral scales (1+272) [vs. 263–270 in Wen (1998), 257–270 in Ziegler *et al.*, (2010), and 261–266 in Nguyen *et al.*, (2011)]; a higher number of subcaudal scales (149) [vs. 119–147 in Ziegler *et al.*, (2010), and 142–144 in Nguyen *et al.*, (2011)]; a higher number of infralabials (12/13) [vs. 10–12 in Ziegler *et al.*, (2010)]; and a higher number of anterior temporals (4/3) [vs. 2–3/2–3 in Ziegler *et al.*, (2010), and 3/3 in Nguyen *et al.*, (2010)].

Ecology: Our specimen was found at night while slowly moving among tree branches about 0.6 m above the ground near a large tree in semi-evergreen forest.

Distribution: *Boiga guangxiensis* is known from China, Laos, and Vietnam (Wen, 1998; Ryabov & Orlov, 2010; Nguyen *et al.*, 2009, 2011; Uetz & Hallermann, 2017). Recently, *B. guangxiensis* was reported from Bu Gia Map National Park in Binh Phuoc Province, southern Vietnam (Vassilieva *et al.*, 2016) and from Cat Tien National Park in Dong Nai Province, southern Vietnam (Geissler *et al.*, 2011). Keo Seima Wildlife Sanctuary in Mondulhiri Province, (Cambodia), the location of our record, is situated

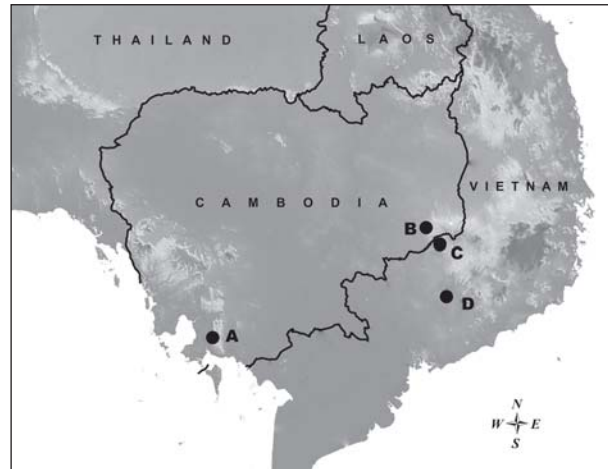


Fig. 1 Localities of new records of three snake species from Cambodia: A) *Sinomicrurus macclellandi* and *Indotyphlops albigiceps* in Bokor National Park, Kampot Province; and B) *Boiga guangxiensis* in Keo Seima Wildlife Sanctuary, Mondulhiri Province. Also shown are known localities for *B. guangxiensis* in adjacent Vietnam: C) Bu Gia Map National Park, Binh Phuoc Province; and D) Cat Tien National Park, Dong Nai Province.

in the western foothills of the Annamite (= Truong Son) Mountains across the Cambodian-Vietnamese border from Bu Gia Map National Park (Fig. 1). A congener of *B. guangxiensis*, *B. jaspidea* (Duméril, Bibron & Duméril, 1854), has been frequently documented in the national park (Vassilieva *et al.*, 2016) but not yet in Cambodia, and so future records of the latter are also anticipated in the vicinity of Keo Seima.

Sinomicrurus macclellandi (Reinhardt, 1844)

Material examined: CBC 02885 (Fig. 3), Teuk Chou District, Kampot Province, Bokor National Park, 10°39’01.5”N 104°03’41.6”E, 928 m asl, collected on 4 October 2017 by Neang Thy and Bryan L. Stuart. A photograph (Fig. 4) in the same locality near the “Black Palace” (10°37’10.97”N, 104°04’40.94”E, ca. 964 m asl) was taken on 11 February 2016 by Jack Stephens.

Remarks: CBC 02885 is a small male specimen with a cylindrical body; SVL 448.3 mm; TaL 46.9 mm; head short, rounded, slightly larger than neck, head length 11.9 mm; scale row formula 13–3–13; one preocular; two postoculars; seven supralabials; six infralabials; 1+1 temporals; 201 ventrals; 30 subcaudals, paired; anal plate divided; and tail ending in sharp spine. In life, the specimen was red above with 29 black transverse bars on dorsum, four on tail, not encircling belly; head black above with broad,



Fig. 2 *Boiga guangxiensis* (CBC 02791) in Keo Seima Wildlife Sanctuary, Mondulkiri Province, eastern Cambodia (© Neang Thy).



Fig. 3 *Sinomicrurus maccllelandi* (CBC 02885) in Bokor National Park, Kampot Province, southern Cambodia (© Neang Thy).



Fig. 4 *Sinomicrurus maccllelandi* (not vouchered) in Bokor National Park, Kampot Province, southern Cambodia (© Jack Stephens).



Fig. 5 *Indotyphlops albiceps* (CBC 02861) in Bokor National Park, Kampot Province, southern Cambodia (© Neang Thy).

yellowish-cream transverse band behind eye; indistinct scattered yellowish cream spotting anterior to eye, on internasals, and prefrontals; and ventral surface cream with black blotches. Photographs taken in February 2016 reveal a snake with a slim, cylindrical, red body, with regular transverse thin black bands, and a black head with a large cream band. Although the snake is partially obscured in the photographs, these characteristics are sufficient to confidently assign the individual to this species (Taylor, 1965).

Ecology: Our specimen was found under a rotting log in evergreen forest at 1240 hrs. The animal photographed in February 2016 was found on a forest trail within 15–20 m of another individual of the same species.

Distribution: *Sinomicrurus maccllelandi* occurs from India and Nepal through Myanmar, Thailand, Laos, Vietnam, Hainan Island of China, Taiwan and the southernmost parts of the Ryukyu Islands in Japan (Taylor, 1965; Deuve, 1970; Nguyen *et al.*, 2009; Uetz & Hallerman, 2017). Due to its wide geographic distribution, the species was expected to occur in Cambodia, although Saint Girons (1972) anticipated that it would occur only in the mountains of the northeastern part of the country.

Indotyphlops albiceps (Boulenger, 1898)

Materials examined: CBC 02861 (Fig. 5), Teuk Chou District, Kampot Province, Bokor National Park, 10°40'51.4"N, 104°03'30.1"E, 841 m asl, collected on 14 February 2017 by Neang Thy and Samorn Vireak.

Remarks: Our single female specimen has SVL 211.3 mm; tail short, TaL 2.7 mm, ratio TaL/SVL 1.3%; head indistinct from neck; snout rounded, inferior suture complete, in contact with 2nd supralabial, superior suture incomplete, about one fourth the distance between nostrial and rostral-frontorostral suture; one preocular, in contact with 2nd and 3rd supralabial; one postocular; eye obscured by ocular shield; four supralabials, the 4th the largest; two infralabials; supralabial imbrication pattern T-III (third supralabial overlapping ocular shield) following Wallach (1993); body scalation formula 22–20–20, following Wallach (1993); diameter of mid-body 4.3 mm, about 50 times the total length; 375 mid-dorsal scales; seven subcaudals; and caudal spine present. Dark brown on dorsal surface and flanks; paler dark brown on venter; entire head, gular region, vent and tail white; and spine base and spine dark brown. These characters generally match those of *I. albiceps* (Pyron & Wallach, 2014; Taylor, 1965). However, our specimen from Bokor has 22 scale rows at neck rather than 18–20 scale rows reported from Thailand (Boulenger, 1898; Taylor, 1965). We assume that this minor difference reflects geographic variation within the species, but future taxonomic evaluation (including molecular analyses) of Cambodian specimens is warranted.

Ecology: Our specimen was found under a rotten log near an ant colony during the day in hilly semi-evergreen forest. A few dead ant larvae were seen together with the snake in a plastic bag used to retain the specimen overnight before preservation, suggesting these may have come from its stomach.

Distribution: *Indotyphlops albiceps* has been reported from Hong Kong, Myanmar, Thailand, Laos and west Malaysia (Taylor, 1965; Uetz & Hallerman, 2017). The type locality is “Chantaboon” (= Chanthaburi) in south-eastern Thailand, and so our record of the species in southern Cambodia was expected.

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NEANG Thy is a Cambodian national from Kandal Province. He studied forestry in the former Soviet Union for six years before returning to Cambodia to work with the Forestry Administration from 1995 to 2003, and has since worked for the Ministry of Environment. Thy regularly undertakes research throughout Cambodia on elephants and herpetology. He currently works for Wild Earth Allies as programme coordinator for elephant conservation in collaboration with the Ministry of Environment in the Prey Lang Wildlife Sanctuary of central Cambodia.

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